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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,200	01/29/2001	Antoine J. Rouphael	2479.1032-001	9134

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 06/04/2004

*9*

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/772,200

Applicant(s)

ROUPHAEL ET AL.

Examiner

Kevin M Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 9/24/2003 is being considered by the examiner.

***Drawings***

2. The drawings are objected to because the quality of the drawings is poor. Figure 2, element 172, is difficult to make out the labels on the figure. In addition, the numerical labels on figures 3-7 are difficult to make out. Corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

3. Claims 15 and 19 are objected to because of the following informalities: Claim 15 discloses the term "seond". The examiner believes this term should be "second". Claim 19, recites the term "forth" on line 6. The examiner believes this term should be "fourth". Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al (US 6,067,292).

Regarding claims 1 and 10, Huang discloses a method and apparatus for encoding data channels in a CDMA system (abstract) having data channel interference. A non-orthogonal pilot signal is identified (column 18, lines 52-61) and is combined with the data channels (figure 1, element 102). The I and Q signals are combined with a channel code and mixed with a spreading PN code in elements 104 and 105 of figure 1. The mixed signals are baseband discriminated in the pulse shaping filters 106 and 107. The signals are modulated in 108 and 109, combined in 110 and transmitted via antenna 111.

Regarding claim 2, the non-orthogonal pilot signal is combined with user data, spread and modulated as shown in figure 1 and described above.

Regarding claims 3, the user signal is modulated and transmitted as shown in figure 1 and described above.

Regarding claim 4, summing nodes 102 and 110 are shown in figure 1.

Regarding claim 5, the spreading of the signal is done in elements 104 and 105.

Regarding claim 6, the modulating of the signals is done in elements 108 and 109.

Regarding claim 7, the I and Q signals are orthogonal.

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Regarding claim 8, the I and Q signals are modulated by the signals shown in figure 1.

Regarding claim 9, the modulated signals are summed in summation circuit 110.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12-17 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al (US 6,067,292) in view of Easton (US 5,764,687).

Regarding claims 11, 16, 22 and 23, Huang discloses a method and apparatus for decoding data channels in a CDMA receiver (abstract). The signal is received and is down converted by modulators 202 and 203 (column 4, lines 15-19). The down converted signals are then filtered to produce resulting baseband I and Q signals (column 4, lines 19-22). The I and Q signals are further decoded and despread by the CDMA RAKE receiver (column 4, lines 22-26). The signals are demodulated and the data and pilot signals are recovered (column 4, line 66 to column 5, line 16). The pilot signals are reconstructed and the pilot signal interference is subtracted from the data (column 2, lines 31-37). The pilot signals are non-orthogonal (column 18, lines 52-61). Huang does not

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disclose conducting a dot product calculation using the non-orthogonal pilot signal and the I and Q signals to generate a decoded output signal. Easton discloses using dot product calculation to decode output signals as stated in column 5, lines 35-67 and the dot product is calculated using the filtered pilots and the symbol accumulation outputs of the selected finger front end (column 19, lines 60-63). The dot product performs the role of symbol weighting needed in a coherent rake receiver (column 5, lines 64-67). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the dot product calculation of Easton in to the method and apparatus of Huang. The dot product weights the finger contributions for efficient combining (column 5, lines 61-64).

Regarding claim 12, the received signal must be demodulated with the original signals used to modulate the signal. The signals are shown on figure 1.

Regarding claim 13, the data channel users are each mixed with a Walsh code unique to each user. A despreading code is used to despread each individual user to recover the original signal. The user signal being combined with the Walsh code is shown in figure 1.

Regarding claim 14, a method of despreading the signal using a complex conjugate is shown in figure 5, element 502.

Regarding claims 15 and 21, the PN code from 502 is orthogonal.

Regarding claim 17, figure 2 of Huang discloses the received signals are filtered.

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Regarding claim 19, all of the interference will be removed from the data signal.

Regarding claim 20 and 24, Huang discloses a method and apparatus for encoding data channels in a CDMA system (abstract) having data channel interference. A non-orthogonal pilot signal is identified (column 18, lines 52-61) and is combined with the data channels (figure 1, element 102). The I and Q signals are combined with a channel code and mixed with a spreading PN code in elements 104 and 105 of figure 1. The mixed signals are baseband discriminated in the pulse shaping filters 106 and 107. The signals are modulated in 108 and 109, combined in 110 and transmitted via antenna 111. Huang further discloses a method and apparatus for decoding data channels in a CDMA receiver (abstract). The signal is received and is down converted by modulators 202 and 203 (column 4, lines 15-19). The down converted signals are then filtered to produce resulting baseband I and Q signals (column 4, lines 19-22). The I and Q signals are further decoded and despread by the CDMA RAKE receiver (column 4, lines 22-26). The signals are demodulated and the data and pilot signals are recovered (column 4, line 66 to column 5, line 16). The pilot signals are reconstructed and the pilot signal interference is subtracted from the data (column 2, lines 31-37). The pilot signals are non-orthogonal (column 18, lines 52-61). Huang does not disclose conducting a dot product calculation using the non-orthogonal pilot signal and the I and Q signals to generate a decoded output signal. Easton discloses using dot product calculation to decode output signals as stated in column 5, lines 35-67 and the dot product is calculated using the

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filtered pilots and the symbol accumulation outputs of the selected finger front end (column 19, lines 60-63). The dot product performs the role of symbol weighting needed in a coherent rake receiver (column 5, lines 64-67). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the dot product calculation of Easton in to the method and apparatus of Huang. The dot product weights the finger contributions for efficient combining (column 5, lines 61-64).

***Allowable Subject Matter***

6. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Contact Information***

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314, (for formal communications intended for entry or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703)



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308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.



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Kevin M. Burd  
PATENT EXAMINER  
5/31/2004